

SONY®

ELECTRONIC VIEWFINDER

BVF-V10

BVF-V10CE

MAINTENANCE MANUAL

1st Edition

Serial No. 10001 and Higher (BVF-V10)

Serial No. 40001 and Higher (BVF-V10CE)

警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理など行くと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual for Electronic Viewfinder BVF-V10/V10CE.

This manual describes the information items necessary when the unit is supplied and installed, items on maintenance, and items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts list, assuming use of system and service engineers.

Contents

This followings are summaries of the each section for understanding the manual.

Section 1 Service Overview

Describes information about board locations, connector input/output signals, cleaning, replacement of CRT.

Section 2 Electrical Alignment

Describes general information for electrical adjustments and the adjustments procedures of this unit.

Section 3 Spare Parts

Describes parts list, exploded views, supplied accessories list used in the unit.

Section 4 Semiconductor Pin Assignments

Describes function diagrams and pin names of semiconductor used in the unit.

Section 5 Diagrams and Board Layouts

Describes overall block diagram, frame wiring and board layouts for every circuit board.

Relative manual

Besides this maintenance manual the following manual is available for this unit.

- **Operation Manual (Supplied with this unit)**

This manual is necessary for application and operation of this unit.

Section 1

Service Overview

1-1. Notes on Repair Parts

1. **WARNING**

Safety Related Components Warning

Components marked $\triangle$ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP(Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

4. Units Representation

The following represented units are changed or omitted in writing.

Units		Representation
Capacitance	μF	μF
Inductance	μH	μH
Resistance	Ω	Abbreviation

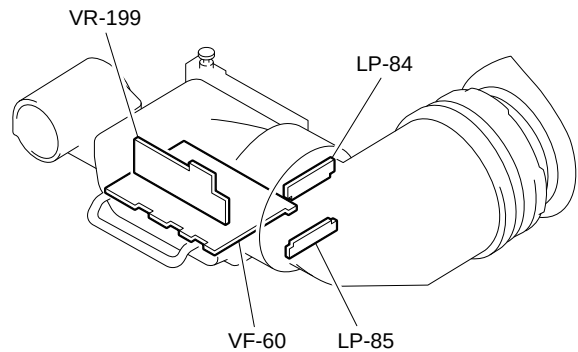
5. Destination Representation

The part indicated “For UCJ/CE” in the spare parts list is used in the unit written below.

For UCJ: The part is used in a unit for Japan, U.S.A. and Canada.

For CE : The part is used in a unit for regions except the above countries.

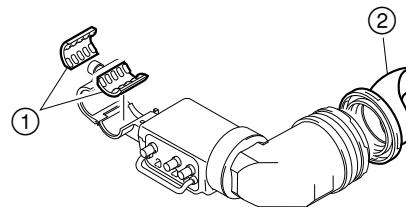
1-2. Location of Printed Circuit Boards



1-3. Recommended Replacement Parts

Parts listed below are recommended replacement parts. They are subject to cracks with the lapse of time. Check sometimes by visual, and replace as necessary.

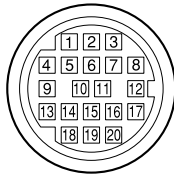
No.	Description	Sony P/N
①	MIC CUSHION, RUBBER	3-692-138-0X ¹
②	EYE CUP	3-723-079-0X



1 : It is recommended that the MIC cushions are replaced in pairs. In this case, please order two pieces.

1-4. Connector Input/Output Signals

VF (20P MALE)



(External View)

Pin No.	Signal	I/O	Specifications
1	VTR SAVE IND	IN	GND:Indicator lights OPEN:Indicator goes out
2	ABNORMAL IND	IN	GND:Indicator lights OPEN:Indicator goes out
3	16:9 MODE	IN	GND:16:9 OPEN:4:3
4	REC (L) IND	IN	9 V:Indicator lights GND or OPEN:Indicator goes out
5	NC		
6	CCIR/EIA	IN	9.3 V:CCIR GND:EIA
7	DISPLAY	OUT	ON:OPEN OFF:GND
8	G TALLY	IN	5 V:Indicator lights GND or OPEN:Indicator goes out
9	NC		
10	NC		
11	ZEBRA	OUT	ON:GND OFF:5 V
12	VF VIDEO (X)	IN	1.0 V p-p Zi = 75
13	NC		
14	NC		
15	NC		
16	BATT IND	IN	5 V:Indicator lights GND or OPEN:Indicator goes out
17	TALLY IND	IN	9 V:Indicator lights GND or OPEN:Indicator goes out
18	9.3 V(VF)	IN	REG 9.3 V
19	GND		GND
20	NC		

This unit normally operates with the above input signals. Cameras described in this manual can output the signals satisfying the specifications.

1-5. Disconnecting/Connecting Flexible Card Wire

The flexible card wire is used between the VF-60 and VR-199 boards. Take care not to break this flexible card wire. This shorten the wire life.

Disconnecting

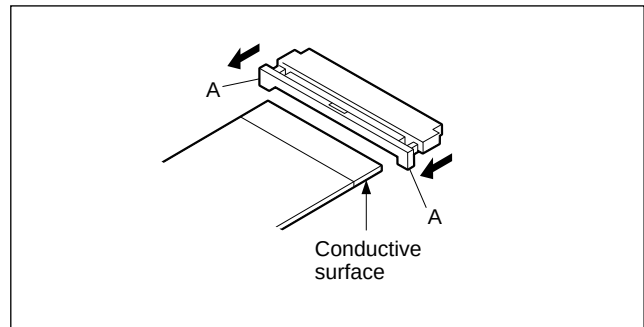
1. Turn off the power.
2. Slide portions A in the direction of the arrow to unlock and pull out the flexible card wire.

Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

1. Slide portions A in the direction of the arrow and insert the flexible card wire as far as it will go with the conductive surface down.
2. Slide portions A in the reverse direction to lock.



1-6. Cleaning

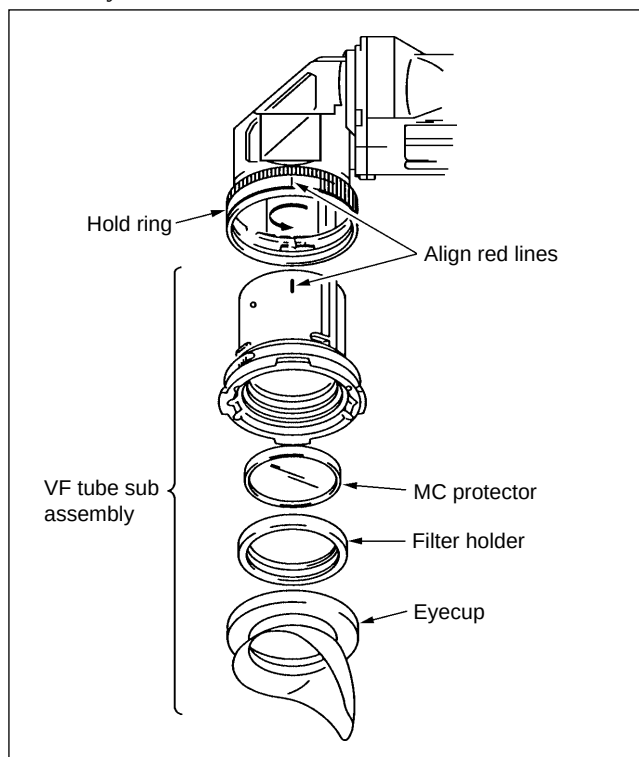
1-6-1. Cleaning of Viewfinder

By extracting VF tube sub assy, lens and MC protector can be easily cleaned. And also dust on the CRT surface or mirror can be easily cleaned off.

1. Turn the hold ring to the left and extract the VF tube sub assy.
2. Detach the eyecup.
3. Remove the MC protector with a commercially available camera lens cleaner. Blow off dust with a blower carefully so as not to flaw the mirror.
5. After the cleaning is completed, install by reversing the preceding steps. Align red lines of the VF tube and VF tube sub assy when inserting, and turn the hold ring to the right until it locks.

Notes

- Do not use any type of solvent, such as alcohol, benzine or thinner to remove stains.
- Be sure to attach the eyecup to the VF, or the MC protector may come off.
- To protect the viewfinder lens from drops, put the MC protector in the filter holder and attach the eyecup securely.



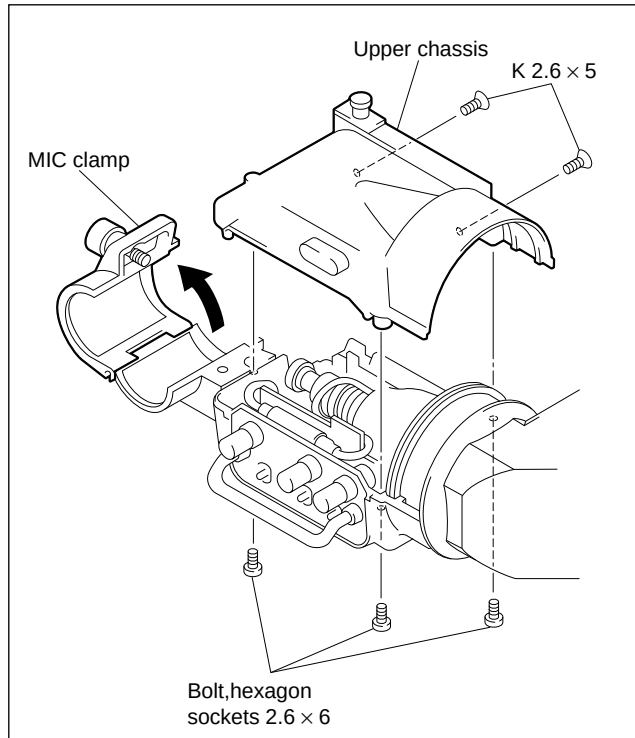
1-6-2. Cares After Using at Special Environment

It is recommended to check the following items after gathering the news at seaside, dust area or spa.

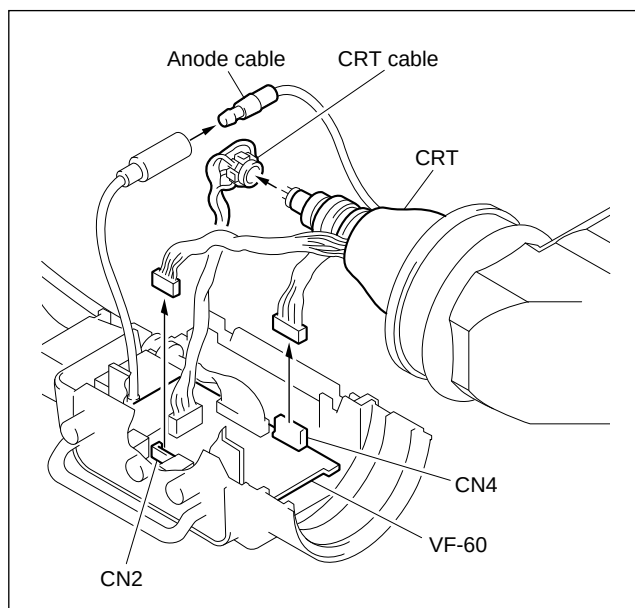
1. Clean off sand and other dust in the unit carefully.
2. Do not allow salt in seawater or sulfur in spa to contact a not-painted surface of the cabinet. They may cause to corrode. Clean with alcohol immediately if contacted.
3. Clean the connection surface of connectors.
4. Carry out the common operation check and check that the unit normally operates.

1-7. Replacement of CRT

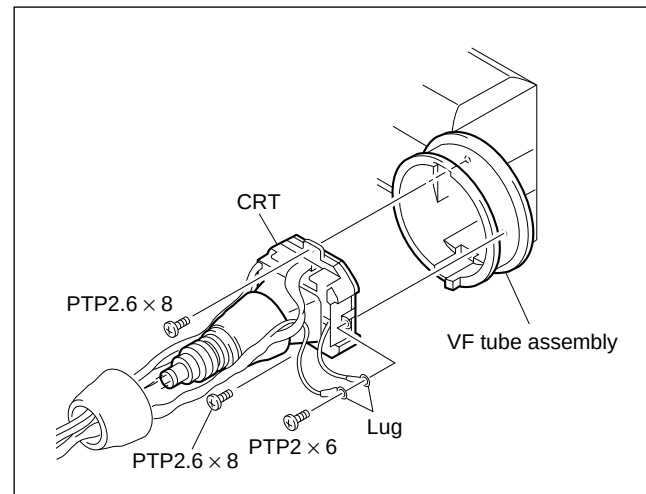
1. Loosen the screw of the MIC clamp and open the MIC clamp.
2. Remove the two screws (K2.6 × 5).
3. Remove the three hexagonal socket bolts and remove the upper chassis.



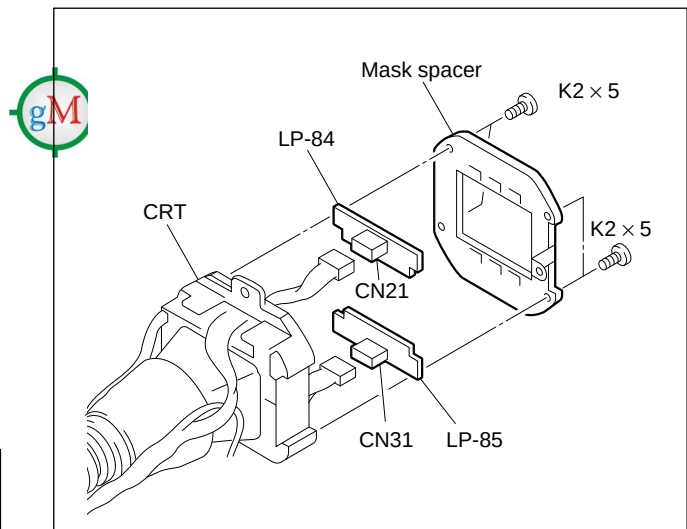
4. Disconnect the three connectors CN2, CN4 and anode cable of the VF-60 board.
5. Detach a tape and remove the CRT socket from the CRT.



6. Remove the three screws and remove the CRT from the VF tube assembly.
7. Remove the CRT tube from the CRT.



8. Remove the four screws and remove the mask spacer.
9. Disconnect the connectors CN21 on LP-84 board and CN31 on LP-85 board.



10. Install a new CRT in the reverse procedures of removal.

Note

When installing the upper chassis, take care not to clamp the harness between upper and lower chassis.

Section 2

Electrical Alignment

2-1. Electrical Adjustment Using a Camcorder

2-1-1. Notes on adjustment

- When performing adjustment, read throughly the following comments.
The calibration of all measuring equipment should be completed.
Peripheral equipment (camera, and others) alignment should be completed.
“2-1-4. Settings for adjustment” should be completed.
Turn off the power before extending the plug-in board using the extension board.

WARNING

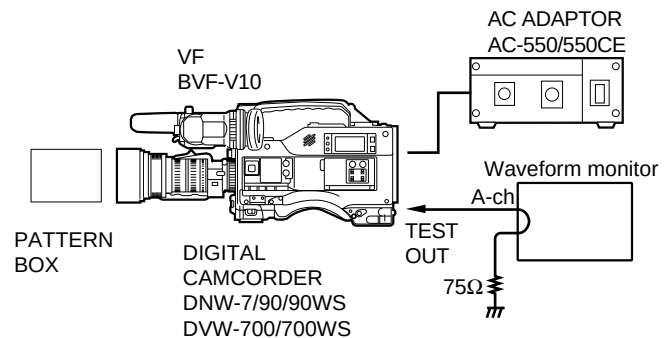
There is a danger of an electric shock around the CRT due to high voltage. Therefore, do not touch the CRT.
Be very careful when service in a live.

2-1-2. Equipment/Fixtures

- Digital camcorder
DNW-7/90/90WS or
Digital betacam camcorder
DVW-700/700WS
- AC adaptor
AC-550/550CE or equivalent
- Oscilloscope
Tektronix 2465B or equivalent
- Waveform monitor
Tektronix 1750/1751 or equivalent
- B/W monitor
- Digital voltmeter
- Frequency counter

Fixtures	Sony P/N
Pattern box “PTB-500”	J-6026-140-B
Resolution chart (4:3)	J-6026-100-A
Resolution chart (16:9)	J-6394-320-A
VF extension harness	J-6395-050-A

2-1-3. Connections



2-1-4. Settings for adjustment

Before adjustment, set switches as follows. If the setting of the GAIN switch is changed from the factory-set value, reset it to its original value, reset it to its original value by referring to the operation manual.

[External]

Side panel:

VTR SAVE/STBY switch	→ STBY
GAIN switch	→ L (0 dB)
OUTPUT/DCC switch	→ CAM/OFF
WHITE BAL switch	→ PRST
MENU/ON/OFF/PAGE switch	→ OFF

Front panel:

SHUTTER switch	→ OFF
FILTER selector	→ 1, B

[Lens]

LENS	→ MANU
IRIS	→ (CLOSE)

[Internal]

AT-84 board

S1	→ ENG
----	-------

Note

Set S1 before turning on the power switch.

S2-1	→ ON
S3	→ Backup

Setting menu (DVW-700/700WS) :

- MASTER GAIN

LOW	→ 0 dB
MID	→ 9 dB
HIGH	→ 18 dB

(To be continued)

FUNCTION 1/2

DETAIL	→ ON
SKIN TONE DETAIL	→ OFF
MATRIX	→ OFF
GAMMA	→ ON
CHROMA	→ ON
TEST SAW	→ OFF

FUNCTION 2/2

GENLOCK	→ ON
CAM RET	→ OFF
FILTER INH	→ ON

TEST OUT

ENC

WIDE SCREEN (DVW-700WS only)

16:9/4:3 MODE	→ 4:3
VF ASPECT	→ AUTO

LEVEL 3/9

KNEE	→ ON
WHITE CLIP	→ ON

LEVEL 4/9

I	→ ON (for NTSC)
Q	→ ON (for NTSC)
R-Y	→ ON (for PAL)
B-Y	→ ON (for PAL)

2-1-6. Vertical Hold Adjustment

Equipment : Frequency counter

Preparations:

Extract the ES-11 board from the camera.
(DNW-7/90/90WS)

Extract the IF-443 board from the camera.
(DVW-700/700WS)

Set RV6 (V SIZE)/VF-60 board to the mechanical center position.

(When RV6 is marked, it should not be turned.)

Test point : TP3/VF-60

GND : E1/VF-60

Adjustment point : RV5 (V HOLD)/VF-60

Specifications : 48.0 $\pm$ 0.5 Hz (for NTSC)
38.0 $\pm$ 0.5 Hz (for PAL)

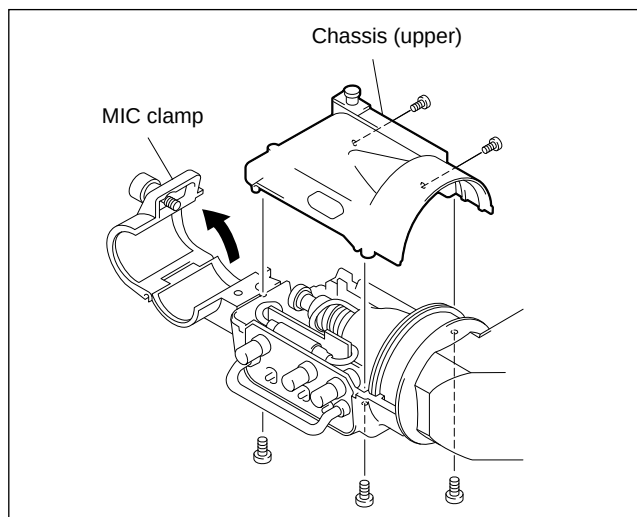
Setting after adjustment :

Attach the ES-11 board to the camera. (DNW-7/90/90WS)

Attach the IF-443 board to the camera. (DVW-700/700WS)

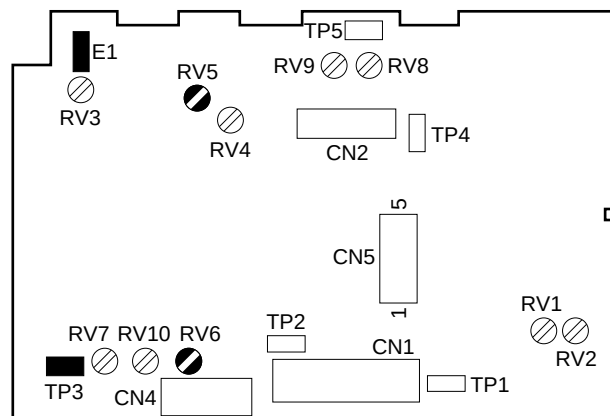
2-1-5. Extending viewfinder

1. Turn off the power switch on the camera before performing adjustment.
2. Remove the viewfinder from the camera, then remove the chassis (upper)



3. Connect the viewfinder to the camera using the VF extension harness (J-6395-050-A) .
4. Turn on the main power switch.

2-2 (E)



VF-60 BOARD (A SIDE)

2-1-7. Horizontal Hold Adjustment

Equipment : Frequency counter

Preparations:

Extract the ES-11 board from the camera.

(DNW-7/90/90WS)

Extract the IF-443 board from the camera.

(DNW-700/700WS)

Set $\odot$ RV6 (V SIZE)/VF-60 board to the mechanical center position.

(When $\odot$ RV6 is marked, it should not be turned.)

Test point : TP1/VF-60

GND : E1/VF-60

Adjustment point : $\odot$ RV3 (H HOLD)/VF-60

Specifications : 15.73 ± 0.05 kHz (for NTSC)

15.63 ± 0.05 kHz (for PAL)

Setting after adjustment :

Attach the ES-11 board to the camera. (DNW-7/90/90WS)

Attach the IF-443 board to the camera. (DVW-700/700WS)

2-1-8. Bright Set Adjustment

Preparations:

OUTPUT/DCC switch (on the camcorder side panel)

→BARS/OFF

BRIGHT control → Fully counterclockwise

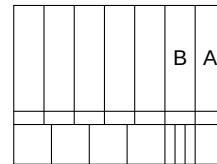
CONTRAST control → Fully clockwise

Adjustment point : $\odot$ RV9 (SUB BRIGHT)/VF-60

Specifications

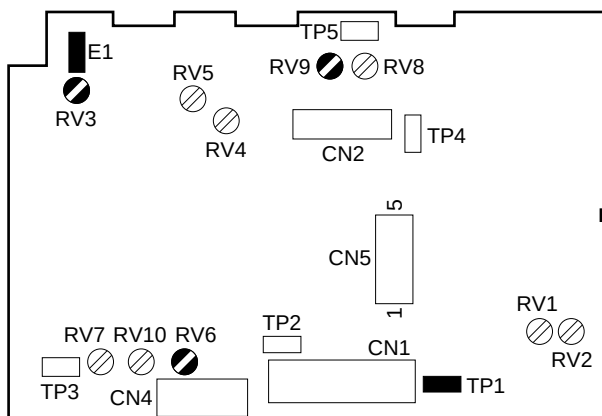
For NTSC model

Specs.: Adjust $\odot$ RV9/VF-60 so that portions A and B on the viewfinder screen can be barely discriminated.



For PAL model

Specs.: Adjust $\odot$ RV9/VF-60 so that portions A and B on the viewfinder screen can be barely discriminated, and portions B and C cannot be discriminated.



VF-60 BOARD (A SIDE)

2-1-9. Focus Adjustment

Note:

This adjustment, “2-1-10. Heater Voltage Adjustment” and “2-1-11. Picture Frame Adjustment” affect each other. Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Waveform monitor

Object : Resolution chart

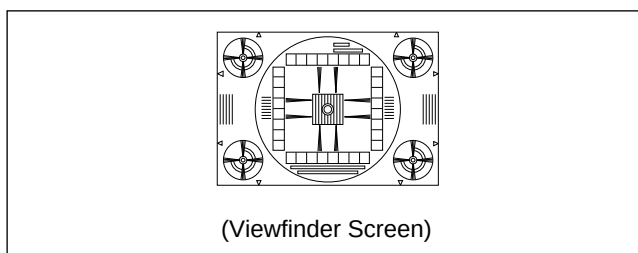
Preparations:

Shoot the resolution chart so that the chart frame is aligned with the underscanned monitor frame.

Adjust the iris of the lens so that the output level at TEST OUT connector /camcorder satisfies the level A.

A = 70 ± 2 IRE (for NTSC)

A = 490 ± 14 mV (for PAL)



BRIGHT control → mechanical center

CONTRAST control → mechanical center

Adjustment point : ●RV2 (ANODE SET)/VF-60

Specifications : Turn ●RV2 fully counterclockwise, and slowly turn it clockwise to adjust the best focus position.

Note:

After adjustment is completed, confirm that the focus operation can be performed irrespective of its BRIGHT and CONTRAST controls setting.

2-1-10. Heater Voltage Adjustment

Note:

This adjustment, “2-1-9. Focus Adjustment” and “2-1-11. Picture Frame Adjustment” affect each other.

Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Digital voltmeter

Preparations:

BRIGHT control → mechanical center

CONTRAST control → mechanical center

PEAKING control → mechanical center

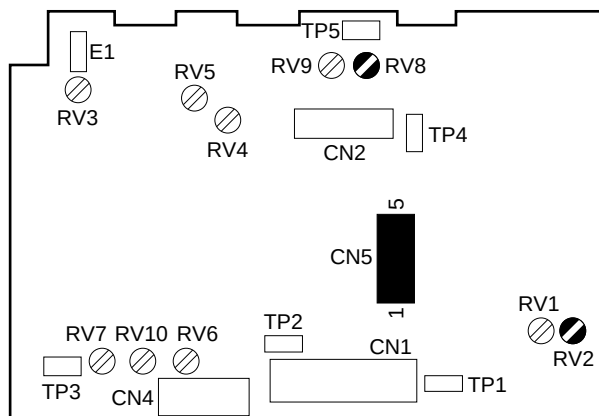
Iris of the lens : Close

Test points : CN5-4pin/VF-60

CN5-5pin/VF-60

Adjustment point : ●RV8 (HEATER)/VF-60

Specifications : 700 ± 10 mV dc



VF-60 BOARD (A SIDE)

2-1-11. Picture Frame Adjustment

Note:

This adjustment, “2-1-9. Focus Adjustment” and “2-1-10. Heater Voltage Adjustment” affect each other. Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Oscilloscope

Object : Resolution chart

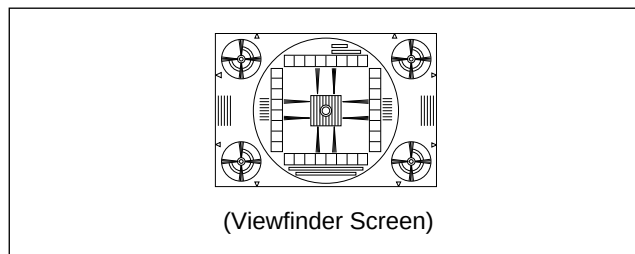
Preparations:

Shoot the resolution chart so that the chart frame is aligned with the underscanned monitor frame.

Adjust the iris of the lens so that the output level at TEST OUT connector /camcorder satisfies the level A.

A = 70 ± 2 IRE (for NTSC)

A = 490 ± 14 mV (for PAL)



BRIGHT control → mechanical center

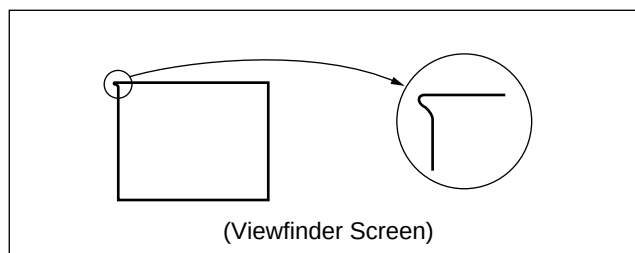
CONTRAST control → mechanical center

PEAKING control → mechanical center

Adjustment procedures:

1. **Adjustment point** : ⚙RV3 (H HOLD)/VF-60

Specifications : If the upper left corner of the picture is distorted, makes right angle.



2. **Adjustment point** : ⚙RV7 (V LIN)/VF-60

Specifications : Minimize the distortion of the four circles at the corners of the resolution chart.

3. **Adjustment point** : ⚙RV1 (H SIZE)/VF-60

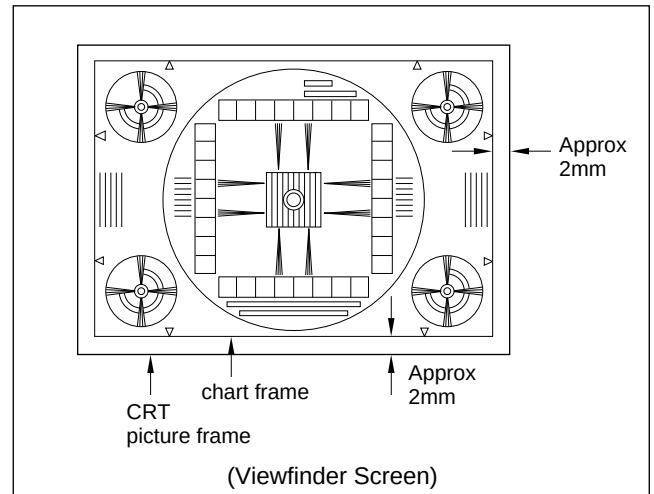
⚙RV6 (V SIZE)/VF-60

⚙Centering magnet

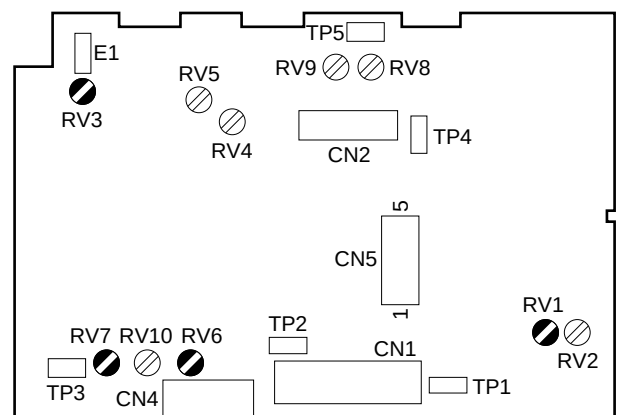
Specifications

: Adjust ⚙RV1 (H SIZE) and ⚙RV6 (V SIZE) so that the position of the resolution chart are as shown below.

Turn the centering magnet only when the left and lower corners cannot be adjusted.

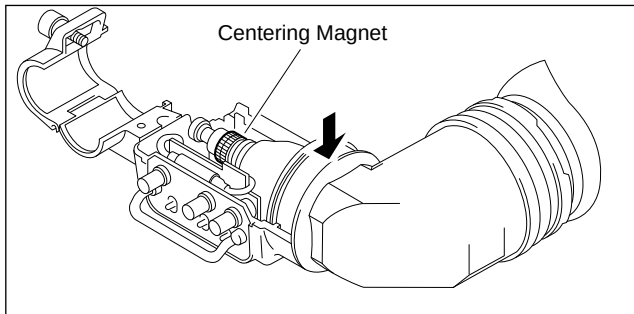


(To be continued)



VF-60 BOARD (A SIDE)

4. Place the VF tube to the lower chassis as shown below, and confirm that the picture is in the center of the viewfinder in the normal installing position.

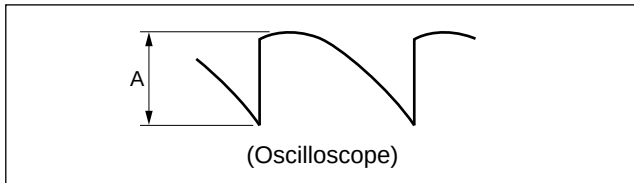


Note

If this unit is used in 16 : 9 mode, perform the following steps (using DNW-90WS or DVW-700WS).

5. **Test point** : TP3/VF-60
GND : E1/VF-60

Measure and memorize the level A shown in the figure below.

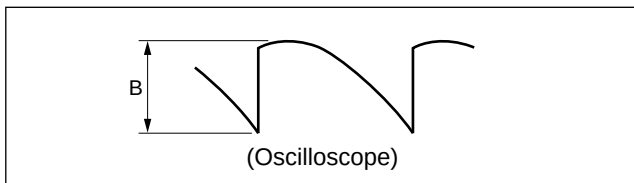


6. On the setting menu, set as follows.
PAGE : WIDE SCREEN
ITEM : 16 : 9/4 : 3 MODE → 16 : 9

7. **Test point** : TP3/VF-60
GND : E1/VF-60

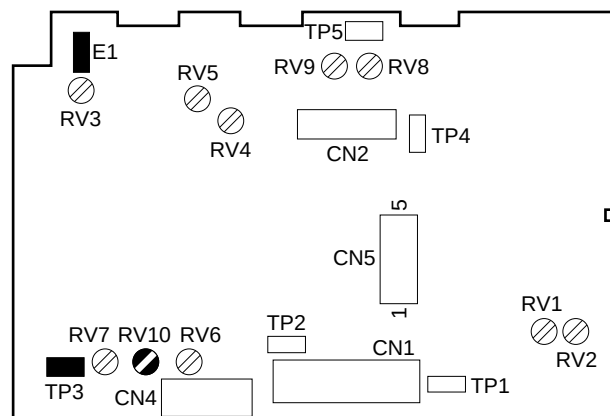
Adjustment point : ●RV10 (V SIZE (WIDE))/VF-60

Specifications : Measure the level B, and adjust the ratio to A : B = 4 : 3.



Note:

- When the centering magnet is turned, paint-lock it again.



VF-60 BOARD (A SIDE)

2-2. Electrical Adjustment Using a VF Checker

2-2-1. Notes on Adjustment

- When performing adjustment, read throughly the following comments.
The calibration of all measuring equipment should be completed.
“2-2-4. Setting for adjustment” should be completed.

WARNING

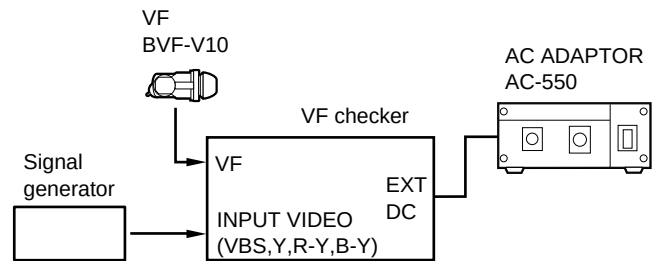
There is a danger of an electric shock around the CRT due to high voltage. Therefore, do not touch the CRT.
Be very careful when service in a live.

2-2-2. Equipment/Fixtures

Composite signal generator
Shibasoku TG21AX or equivalent
Monoscope signal output unit
Shibasoku TG21A1001 or equivalent [For NTSC]
Shibasoku TG21A2001 or equivalent [For PAL]
AC adapter
Sony AC-550 or equivalent
Oscilloscope
Tektronix 2465B or equivalent
Waveform monitor
Tektronix 1750/1751 or equivalent
Frequency counter

Fixtures	Sony P/N
VF cheker	J-6422-300-A
VF extension harness	J-6395-050-A

2-2-3. Connections



2-2-4. Settings for adjustment

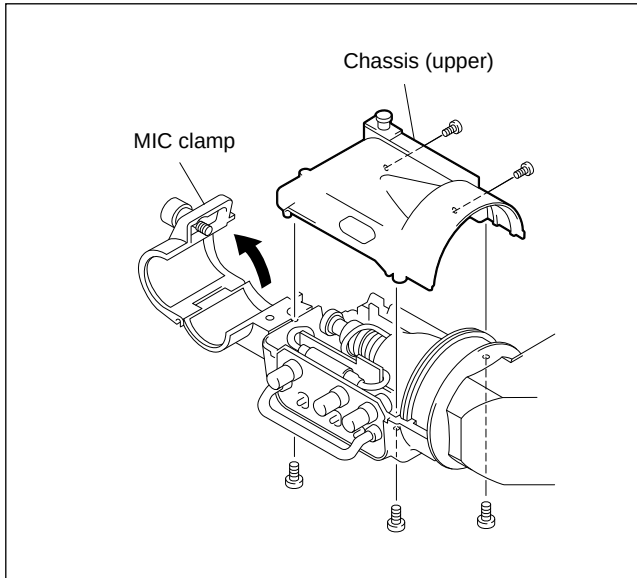
Set switches as follows before adjustment.

VF checker:

INPUT VIDEO VBS switch → SG
INPUT VIDEO Y/R-Y/B-Y switch → SG
EIA/CCIR switch → EIA [For NTSC]
EIA/CCIR switch → CCIR [For PAL]
16 : 9/4 : 3 switch → 4 : 3
COMP/VBS switch → VBS

2-2-5. Extending Viewfinder

1. Turn off the main power switch (on the camera) before performing adjustment.
2. Remove the viewfinder from the camera, then remove the chassis (upper). (Refer to Section 1-5“Replacement of CRT”.)



3. Connect the viewfinder to the camera using the VF extension harness (J-6395-050-A).
4. Turn on the main power switch.

2-2-6. Vertical Hold Adjustment

Equipment : Frequency counter

Preparations:

Disconnect the cable from the VBS connector on the VF checker.

Set $\odot$ RV6 (V SIZE)/VF-60 board to the mechanical center position.

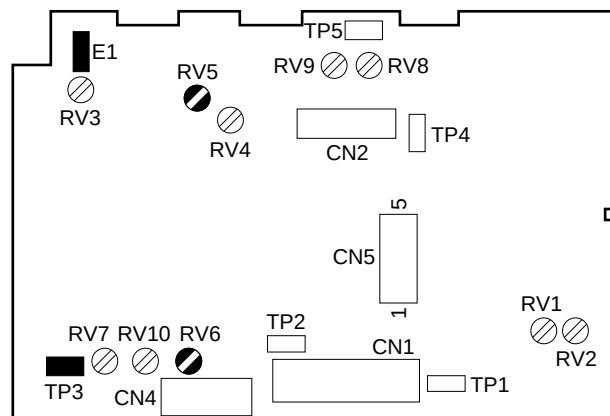
(When $\odot$ RV6 is marked, it should not be turned.)

Test point : TP3/VF-60

GND : E1/VF-60

Adjustment point : $\odot$ RV5 (V HOLD)/VF-60

Specifications : 48.0 ± 0.5 Hz (for NTSC)
 38.0 ± 0.5 Hz (for PAL)



VF-60 BOARD (A SIDE)

2-2-7. Horizontal Hold Adjustment

Equipment : Frequency counter

Preparations:

Disconnect the cable from the VBS connector on the VF checker.

Set $\odot$ RV6 (V SIZE)/VF-60 board to the mechanical center position.

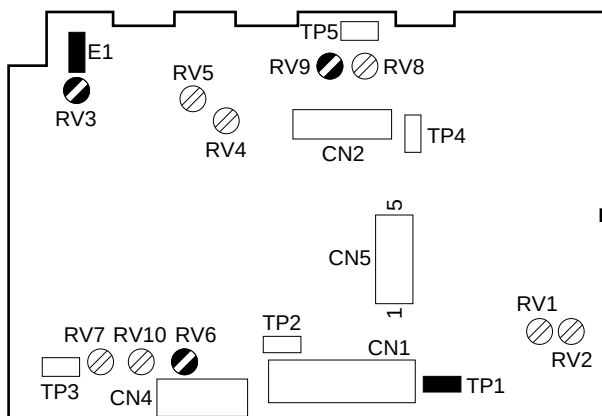
(When $\odot$ RV6 is marked, it should not be turned.)

Test point : TP1/VF-60

GND : E1/VF-60

Adjustment point : $\odot$ RV3 (H HOLD)/VF-60

Specifications : 15.73 ± 0.05 kHz (for NTSC)
 15.63 ± 0.05 kHz (for PAL)



VF-60 BOARD (A SIDE)

2-2-8. Bright Set Adjustment

Preparations:

Input the color bars signal to the VBS connector on the VF checker.

BRIGHT control → Fully counterclockwise

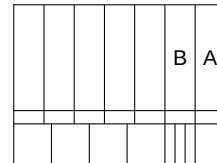
CONTRAST control → Fully clockwise

Adjustment point : $\odot$ RV9 (SUB BRIGHT)/VF-60

Specifications

For NTSC model

Specs.: Adjust $\odot$ RV9/VF-60 so that portions A and B on the viewfinder screen can be barely discriminated.



For PAL model

Specs.: Adjust $\odot$ RV9/VF-60 so that portions A and B on the viewfinder screen can be barely discriminated, and portions B and C cannot be discriminated.



2-2-9. Focus Adjustment

Note:

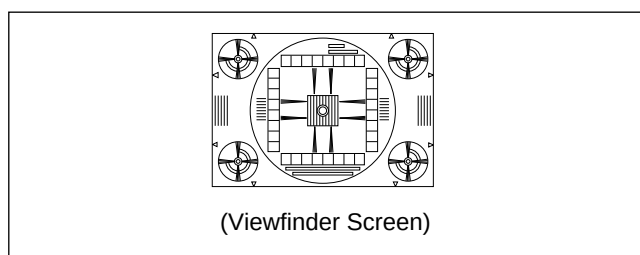
This adjustment, “2-2-10. Heater Voltage Adjustment” and “2-2-11. Picture Frame Adjustment” affect each other. Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Waveform monitor

Object : Resolution chart

Preparations:

Input the monoscope signal to the VBS connector on the VF checker.



BRIGHT control → mechanical center

CONTRAST control → mechanical center

Adjustment point : ●RV2 (ANODE SET)/VF-60

Specifications : Turn ●RV2 fully counterclockwise, and slowly turn it clockwise to adjust the best focus position.

Note:

After adjustment is completed, confirm that the focus operation can be performed irrespective of its BRIGHT and CONTRAST controls setting.

2-2-10. Heater Voltage Adjustment

Note:

This adjustment, “2-2-9. Focus Adjustment” and “2-2-11. Picture Frame Adjustment” affect each other.

Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Digital voltmeter

Preparations:

BRIGHT control → mechanical center

CONTRAST control → mechanical center

PEAKING control → mechanical center

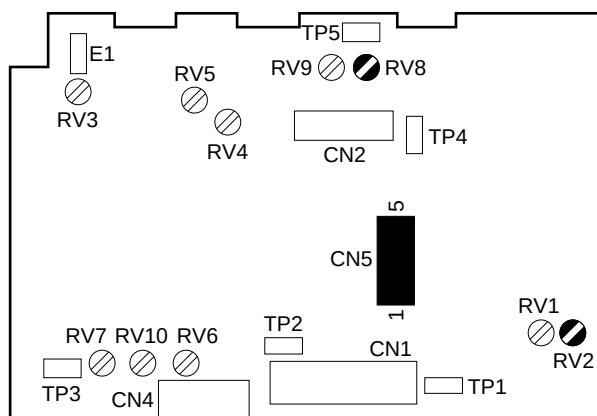
Iris of the lens : Close

Test points : CN5-4pin/VF-60

CN5-5pin/VF-60

Adjustment point : ●RV8 (HEATER)/VF-60

Specifications : 700 ± 10 mV dc



VF-60 BOARD (A SIDE)

2-2-11. Picture Frame Adjustment

Note:

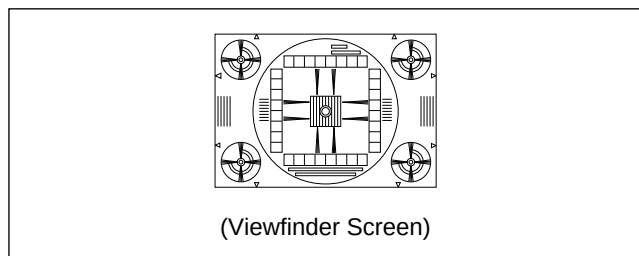
- This adjustment, “2-2-9. Focus Adjustment” and “2-2-10. Heater Voltage Adjustment” affect each other. Therefore, repeat these three adjustments until these specifications are satisfied.

Equipment : Oscilloscope

Object : Resolution chart

Preparations:

Input the monoscope signal to the VBS connector on the VF checker.



BRIGHT control → mechanical center

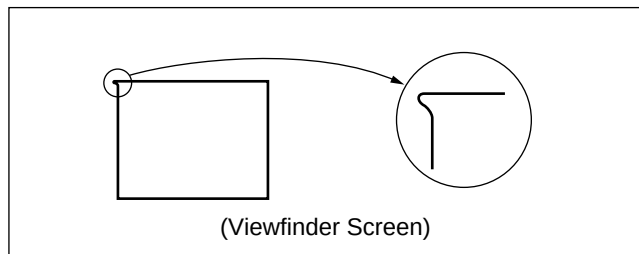
CONTRAST control → mechanical center

PEAKING control → mechanical center

Adjustment procedures:

1. **Adjustment point** : ●RV3 (H HOLD)/VF-60

Specifications : If the upper left corner of the picture is distorted, makes right angle.



2. **Adjustment point** : ●RV7 (V LIN)/VF-60

Specifications : Minimize the distortion of the four circles at the corners of the resolution chart.

3. **Adjustment point** : ●RV1 (H SIZE)/VF-60

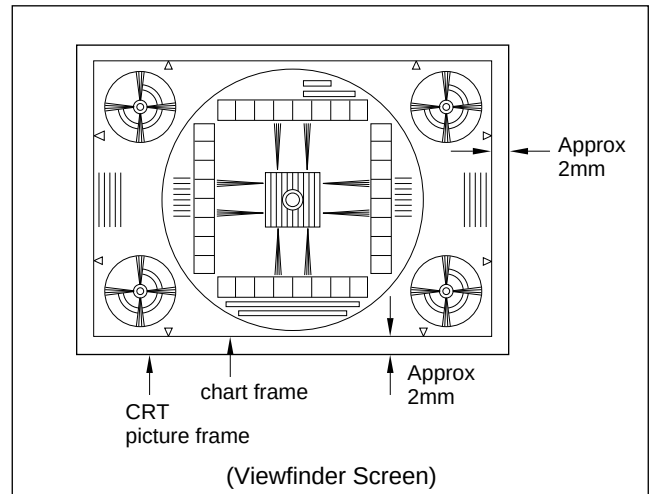
●RV6 (V SIZE)/VF-60

●Centering magnet

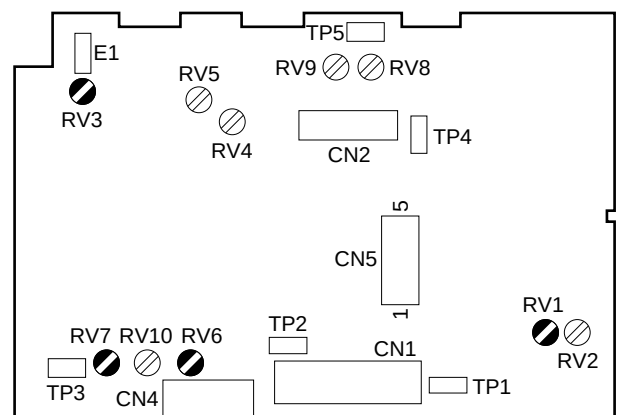
Specifications

: Adjust ●RV1 (H SIZE) and ●RV6 (V SIZE) so that the position of the resolution chart are as shown below.

Turn the centering magnet only when the left and lower corners cannot be adjusted.

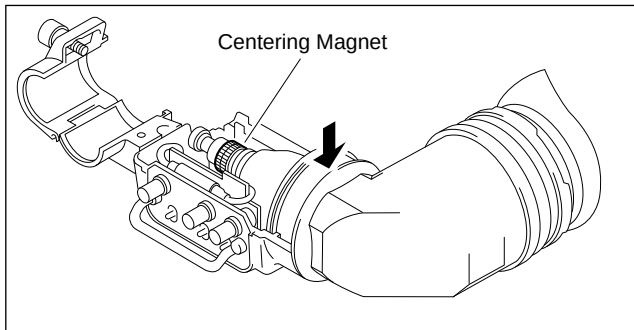


(To be continued)



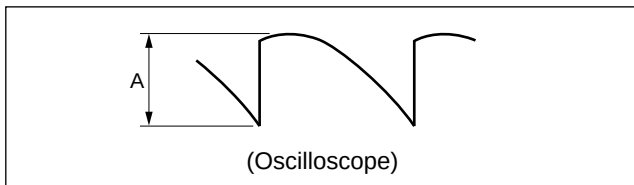
VF-60 BOARD (A SIDE)

4. Place the VF tube to the lower chassis as shown below, and confirm that the picture is in the center of the viewfinder in the normal installing position.



5. **Test point :** TP3/VF-60
GND : E1/VF-60

Measure and memorize the level A shown in the figure below.

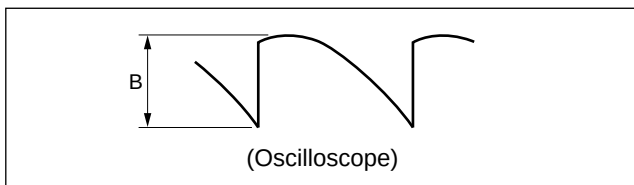


6. 16 : 9/4 : 3 switch/VF checker → 16 : 9

7. **Test point** : TP3/VF-60
GND : E1/VF-60

Adjustment point : RV10 (V SIZE (WIDE))/VF-60

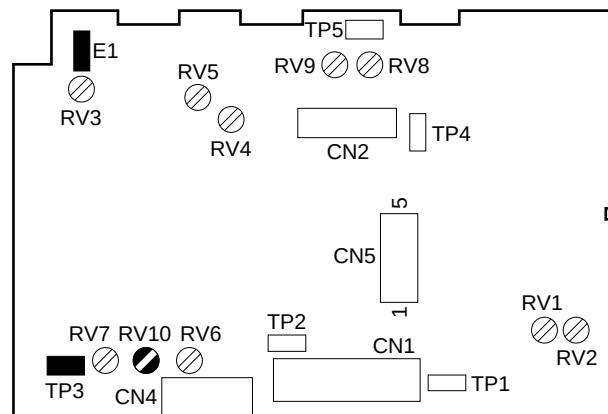
Specifications : Measure the level B, and adjust the ratio to A : B = 4 : 3.



Notes:

When the centering magnet is turned, paint-lock it again.

16 : 9/4 : 3 switch/VF checker → 4 : 3

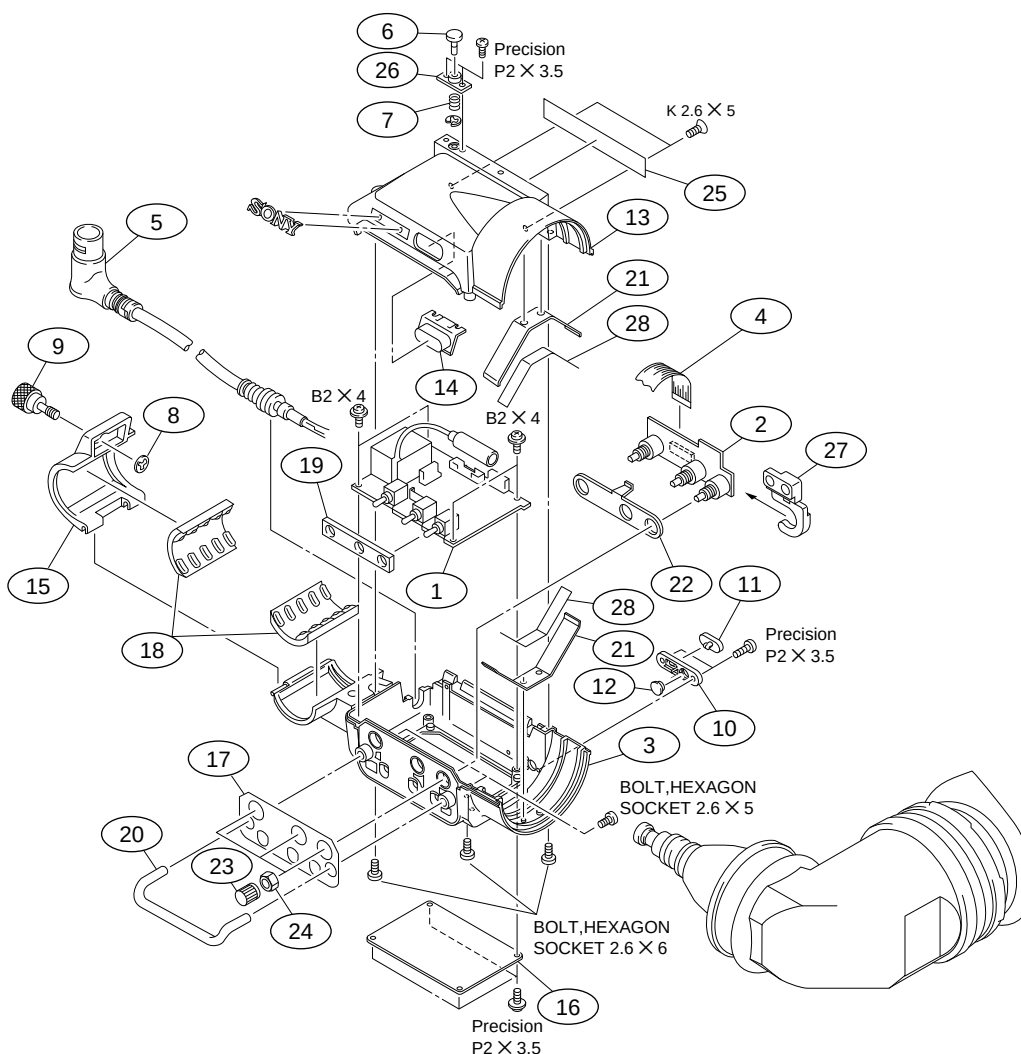


VF-60 BOARD (A SIDE)

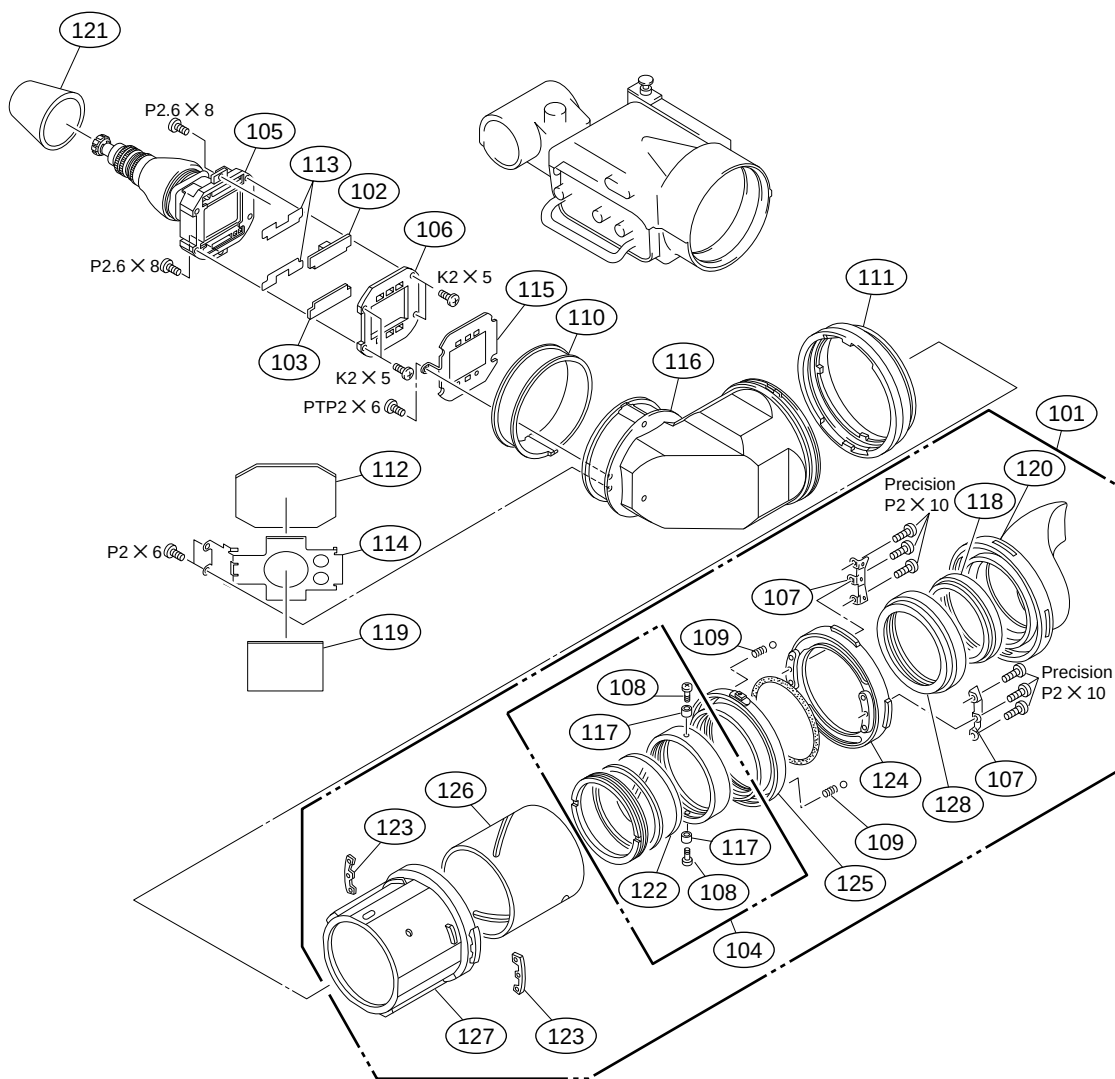
Section 3

Spare Parts

3-1. Exploded Views



No.	Part No.	SP Description	No.	Part No.	SP Description
1	A-8269-387-A	o MOUNTED CIRCUIT BOARD, VF-60	16	3-692-135-01	o LID, COVER
2	A-8269-388-A	o MOUNTED CIRCUIT BOARD, VR-199	17	3-692-137-01	o LABEL, VF
3	X-3678-435-1	o CHASSIS, BOTTOM ASSY	18	3-692-138-01	s MIC CUSHION, RUBBER
4	1-775-771-11	o FLEXIBLE CARD WIRE (14 CORE)	19	3-692-145-01	o CUSHION, DROP PROTECTION
5	1-777-028-21	s CORD, CONNECTION (VF)	20	3-692-147-01	o GUARD BAR
6	2-277-457-00	s KNOB, STOPPER	21	3-692-148-02	o LEAF SPRING
7	2-277-466-01	s SPRING, COMPRESSION	22	3-692-151-01	o PLATE, GROUND
8	3-165-904-01	s WASHER, SCREW STOPPER	23	3-692-154-03	s KNOB, VF
9	3-657-657-00	s SCREW (M5)	24	3-693-327-01	s NUT, M6
10	3-679-693-01	o BASE, SLIDE	25	3-693-978-01	o SHEET, LUBRICATION
11	3-679-694-01	o COVER, SLIDE	26	3-710-008-02	s HOUSING, STOPPER
12	3-679-695-01	o COVER, TALLY	27	3-695-875-01	s PROTECTOR, CABLE
13	3-692-131-01	o CHASSIS, UPPER	28	3-694-285-01	o SHEET, LUBRICATION (SPRING)
14	3-692-132-03	o COVER, TALLY			
15	3-692-134-01	o MIC CLAMP			



No.	Part No.	SP Description
101	A-7612-389-B	s TUBE SUB ASSY, VF
102	A-8269-389-A	o MOUNTED CIRCUIT BOARD, LP-84
103	A-8269-390-A	o MOUNTED CIRCUIT BOARD, LP-85
104	X-3722-436-1	o LENS ASSY
105	△ 1-251-386-11	s 1.5" CRT ASSY
106	3-176-022-03	o SPACER (B), MASK
107	3-176-414-01	o RETAINER, RING
108	3-335-207-01	s SHAFT, MOTOR
109	3-573-150-00	o SPRING, COMPRESSION
110	3-692-133-01	o RING, VF
111	3-692-136-01	o FIXED RING
112	3-692-139-01	o MIRROR(2)
113	3-692-144-01	o SPACER, LP
114	3-692-146-01	o HOLDER, MIRROR(2)
115	3-692-155-01	o PLATE, DISPLAY
116	3-692-166-01	o VF TUBU(3)
117	3-722-485-01	o ROLLER, SLIDE
118	3-723-069-02	o PROTECTOR, MC
119	3-723-073-01	o CUSHION, MIRROR
120	3-723-079-01	s EYE CUP

No.	Part No.	SP Description
121	3-725-220-02	o TUBE (A), CRT
122	3-725-276-01	s LUPE, VF
123	3-742-038-01	o NUT (2), PLATE
124	3-742-052-03	o HOLDER, EYE CUP
125	3-742-053-02	o RING
126	3-742-054-01	o TUBE
127	3-742-060-01	o HOLDER, RING
128	3-742-075-01	o HOLDER, FILTER
	7-623-505-01	s LUG, 2
	7-624-200-01	s NUT, PUSH 1.5
	7-627-454-38	s SCREW, PRECISION +K 2.6X5
	7-627-553-78	s SCREW, PRECISION +P 2X10
	7-627-554-18	s SCREW, PRECISION +P 2X3.5 TYPE1
	7-671-158-01	s BALL, STAINLESS (2.5 DIA)
	7-682-545-04	s SCREW +B 3X4
	7-683-412-05	s BOLT, HEXAGON SOCKET 2.6X6
	7-685-104-19	s SCREW +P 2X6 TYPE2 NON-SLIT
	7-685-134-19	s SCREW +P 2.6X8 TYPE2 NON-SLIT

3-2. Electrical Parts List

LP-84 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8269-389-A	o MOUNTED CIRCUIT BOARD, LP-84
CN21	1-566-759-11	o PIN, CONNECTOR (PC BOARD) 4P
D1	8-719-026-39	s DIODE CL-150UR-CD-T
D2	8-719-026-39	s DIODE CL-150UR-CD-T
D3	8-719-987-43	s DIODE CL-150PG-CD

LP-85 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8269-390-A	o MOUNTED CIRCUIT BOARD, LP-85
CN31	1-566-759-11	o PIN, CONNECTOR (PC BOARD) 4P
D1	8-719-026-16	s DIODE CL-150D-CD-T
D2	8-719-026-39	s DIODE CL-150UR-CD-T
D3	8-719-026-16	s DIODE CL-150D-CD-T

VF-60 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8269-387-A	o MOUNTED CIRCUIT BOARD, VF-60
C1	1-162-970-11	s CERAMIC, CHIP 0.01uF 10% 25V
C2	1-162-970-11	s CERAMIC, CHIP 0.01uF 10% 25V
C3	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C4	1-104-911-11	s TANTALUM, CHIP 33uF 20% 10V
C5	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C6	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C7	1-163-249-11	s CERAMIC, CHIP 82PF 5% 50V
C8	1-107-686-11	s CHIP, TANTALUM 4.7uF 20% 16V
C9	1-162-970-11	s CERAMIC, CHIP 0.01uF 10% 25V
C10	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C11	△ 1-136-480-11	s FILM 0.0015MF 5% 100
C12	1-136-683-11	s FILM 0.0056uF 5% 100V
C13	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C14	1-162-970-11	s CERAMIC, CHIP 0.01uF 10% 25V
C15	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C16	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C17	1-135-165-11	s TANTALUM, CHIP 33uF 10% 16V
C18	1-104-823-11	s TANTALUM, CHIP 47uF 20% 16V
C19	1-164-350-11	s CERAMIC 470PF 10% 1KV
C20	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C21	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C22	1-128-405-11	s ELECT 22uF 20% 50V
C23	1-162-957-11	s CERAMIC 220PF 5% 50V
C24	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C25	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C26	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C27	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C28	1-107-689-21	s TANTALUM 1uF 20% 35V
C29	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C30	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C31	1-135-091-91	s CHIP, TANTALUM 1uF 20% 16V
C32	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C33	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C35	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C36	1-162-957-11	s CERAMIC 220PF 5% 50V
C37	1-128-397-21	s ELECT 100uF 20% 16V
C38	1-128-394-11	s ELECT 220uF 20% 10V
C39	1-164-156-11	s CERAMIC 0.1uF 25V
C40	1-107-689-21	s TANTALUM 1uF 20% 35V
C41	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C42	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C43	1-162-969-11	s CERAMIC 0.0068uF 10% 25V
C44	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C45	1-104-547-11	s FILM 0.0047uF 5% 16V
C46	1-164-227-11	s CERAMIC 0.022uF 10% 25V
C47	1-107-689-21	s TANTALUM 1uF 20% 35V
C48	1-163-017-00	s CERAMIC 0.0047uF 10% 50V
C49	1-104-912-11	s CHIP, TANTALUM 3.3uF 20% 16V
C50	1-164-156-11	s CERAMIC 0.1uF 25V
C51	1-135-159-21	s TANTALUM, CHIP 10uF 10% 20V
C52	1-164-156-11	s CERAMIC 0.1uF 25V
C53	1-164-156-11	s CERAMIC 0.1uF 25V
C54	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C55	1-164-156-11	s CERAMIC 0.1uF 25V
CN1	1-580-538-11	o PIN, CONNECTOR (PC BOARD) 18P
CN2	1-764-080-21	s PIN, CONNECTOR (PC BOARD) 8P
CN3	1-569-529-21	o HOUSING, 14P

(VF-60 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
CN4	1-564-004-11	o PIN, CONNECTOR 5P
CN5	1-506-470-11	s PIN, CONNECTOR 5P
D1	8-719-404-35	s DIODE MA141WK
D2	8-719-900-95	s DIODE V09G
D3	8-719-820-41	s DIODE 1SS302
D4	8-719-901-19	s DIODE V11N
D5	8-719-900-95	s DIODE V09G
D6	8-719-404-35	s DIODE MA141WK
D7	8-719-404-35	s DIODE MA141WK
D8	8-719-029-68	s DIODE RD6.2UJN-T1
D9	8-719-820-41	s DIODE 1SS302
D10	8-719-404-35	s DIODE MA141WK
D11	8-719-404-35	s DIODE MA141WK
D12	8-719-989-53	s DIODE CL-200HR-C-TSL
DL1	1-411-383-11	s DELAY LINE 80 nS
IC1	△ 8-759-300-28	s IC HA11423MP
IC2	8-759-100-94	s IC UPC358G2
IC3	8-759-209-57	s IC TC4S09F
IC4	8-759-209-54	s IC TC4S01F
L2	△ 1-459-899-11	s COIL, HORIZONTAL LINEARITY
L3	1-410-380-31	s INDUCTOR CHIP 8.2uH
Q1	8-729-028-91	s TRANSISTOR DTA144EUA-T106
Q2	8-729-028-91	s TRANSISTOR DTA144EUA-T106
Q3	8-729-117-32	s TRANSISTOR 2SC4177
Q4	8-729-117-16	s TRANSISTOR 2SA1611-M6
Q5	8-729-403-29	s TRANSISTOR XN6435
Q6	8-729-024-56	s TRANSISTOR 2SA1808
Q7	8-729-422-44	s TRANSISTOR 2SK663
Q8	8-729-403-32	s TRANSISTOR XN6534
Q9	8-729-105-37	s TRANSISTOR 2SC3360-N16
Q10	8-729-105-37	s TRANSISTOR 2SC3360-N16
Q11	8-729-117-32	s TRANSISTOR 2SC4177
Q12	8-729-117-16	s TRANSISTOR 2SA1611-M6
Q13	8-729-141-48	s TRANSISTOR 2SB624-BV345
Q14	8-729-119-00	s TRANSISTOR 2SK612
Q15	8-729-119-00	s TRANSISTOR 2SK612
Q16	8-729-028-91	s TRANSISTOR DTA144EUA-T106
Q17	8-729-117-32	s TRANSISTOR 2SC4177
Q18	8-729-117-16	s TRANSISTOR 2SA1611-M6
Q19	8-729-117-32	s TRANSISTOR 2SC4177
Q20	8-729-117-32	s TRANSISTOR 2SC4177
Q21	8-729-117-16	s TRANSISTOR 2SA1611-M6
Q22	8-729-422-12	s TRANSISTOR 2SK664
R1	1-216-671-11	s CHIP, METAL 6.8K 0.50% 1/10W
R2	1-216-309-00	s CHIP, METAL 5.6 5% 1/10W
R3	1-216-627-11	s CHIP, METAL 100 0.50% 1/10W
R4	1-208-806-11	s CHIP, METAL 10K 0.50% 1/10W
R5	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R6	1-208-774-11	s CHIP, METAL 470 0.50% 1/10W
R7	1-208-806-11	s CHIP, METAL 10K 0.50% 1/10W
R8	1-218-704-11	s METAL 3.3K 0.50% 1/16W
R9	1-216-635-11	s METAL, CHIP 220 0.5% 1/10W
R10	1-216-635-11	s METAL, CHIP 220 0.5% 1/10W
R11	1-218-680-11	s METAL 330 0.50% 1/16W
R12	1-216-611-11	s CHIP, METAL 22 0.50% 1/10W
R13	1-216-635-11	s METAL, CHIP 220 0.5% 1/10W

(VF-60 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R14	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R15	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R16	1-208-774-11	s CHIP, METAL 470 0.50% 1/10W
R17	1-218-668-11	s CHIP, METAL 100 0.50% 1/16W
R18	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R19	1-218-680-11	s METAL 330 0.50% 1/16W
R20	1-218-700-11	s METAL 2.2K 0.50% 1/16W
R21	1-218-700-11	s METAL 2.2K 0.50% 1/16W
R22	1-216-639-11	s METAL, CHIP 330 0.5% 1/10W
R23	1-218-724-11	s CHIP, METAL 22K 5% 1/16W
R24	1-208-806-11	s CHIP, METAL 10K 0.50% 1/10W
R25	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R26	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R27	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R28	1-216-619-11	s CHIP, METAL 47 0.50% 1/10W
R29	1-208-812-11	s CHIP, METAL 18K 0.50% 1/10W
R30	1-208-824-11	s CHIP, METAL 56K 0.50% 1/10W
R31	1-218-708-11	s METAL 4.7K 0.50% 1/16W
R32	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R33	1-216-655-11	s CHIP, METAL 1.5K 0.50% 1/10W
R34	1-208-800-11	s CHIP, METAL 5.6K 0.50% 1/10W
R35	1-218-698-11	s METAL 1.8K 0.50% 1/16W
R36	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R37	1-208-806-11	s CHIP, METAL 10K 0.50% 1/10W
R38	1-218-714-11	s METAL 8.2K 0.50% 1/16W
R39	1-216-633-11	s CHIP, METAL 180 0.50% 1/10W
R40	1-208-822-11	s CHIP, METAL 47K 0.50% 1/10W
R41	1-216-609-11	s CHIP, METAL 18 0.50% 1/10W
R42	1-218-724-11	s CHIP, METAL 22K 5% 1/16W
R43	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R44	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R45	1-218-740-11	s METAL 100K 0.50% 1/16W
R46	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R47	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R48	1-218-899-11	s CHIP, METAL 150K 0.50% 1/16W
R49	1-216-655-11	s CHIP, METAL 1.5K 0.50% 1/10W
R50	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R51	1-208-812-11	s CHIP, METAL 18K 0.50% 1/10W
R52	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R53	1-218-708-11	s METAL 4.7K 0.50% 1/16W
R54	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R55	1-216-699-11	s CHIP, METAL 100K 0.50% 1/10W
R56	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R57	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R58	1-208-854-11	s CHIP, METAL 1M 0.50% 1/10W
R59	1-208-806-11	s CHIP, METAL 10K 0.50% 1/10W
R60	1-216-699-11	s CHIP, METAL 100K 0.50% 1/10W
R61	1-216-133-00	s CHIP, METAL 3.3M 5% 1/10W
R62	1-218-716-11	s METAL 10K 0.50% 1/16W
R63	1-216-677-11	s METAL, CHIP 12K 0.5% 1/10W
R64	1-218-768-11	s METAL 470K 0.50% 1/10W
R65	1-216-685-11	s METAL, CHIP 27K 0.5% 1/10W
R66	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R67	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R68	1-218-648-11	s METAL 15 0.50% 1/16W
R69	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R70	1-218-692-11	s CHIP, METAL 1K 0.50% 1/16W
R71	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R72	1-216-627-11	s CHIP, METAL 100 0.50% 1/10W

(VF-60 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R73	1-216-629-11	s CHIP, METAL 120 0.50% 1/10W
R74	△ 1-218-883-11	s METAL 33K 0.50% 1/16W
R75	1-218-708-11	s METAL 4.7K 0.50% 1/16W
R76	1-218-716-11	s METAL 10K 0.50% 1/16W
R77	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R78	1-218-873-11	s CHIP, METAL 12K 0.50% 1/16W
R80	1-216-295-11	s CHIP, CONDUCTOR 0
R81	1-218-716-11	s METAL 10K 0.50% 1/16W
R82	1-216-793-11	s METAL 4.7 5% 1/16W
R83	1-218-716-11	s METAL 10K 0.50% 1/16W
R84	1-218-773-11	s CHIP, METAL 750K 0.50% 1/10W
R85	1-218-841-11	s CHIP, METAL 560 0.50% 1/16W
R86	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R87	1-218-732-11	s METAL 47K 0.50% 1/16W
R88	1-218-736-11	s METAL 68K 0.50% 1/16W
R89	1-218-732-11	s METAL 47K 0.50% 1/16W
R90	1-218-714-11	s METAL 8.2K 0.50% 1/16W
R91	1-218-692-11	s CHIP, METAL 1K 0.50% 1/16W
R92	1-218-883-11	s METAL 33K 0.50% 1/16W
R93	1-218-867-11	s CHIP, METAL 6.8K 0.50% 1/16W
R94	1-211-969-11	s CHIP, METAL 10 0.50% 1/16W
R95	1-218-740-11	s METAL 100K 0.50% 1/16W
R96	△ 1-218-700-11	s METAL 2.2K 0.50% 1/16W
R97	1-218-710-11	s CHIP, METAL 5.6K 0.50% 1/16W
R98	1-218-740-11	s METAL 100K 0.50% 1/16W
R99	1-218-684-11	s CHIP, METAL 470 0.50% 1/16W
R100	1-218-684-11	s CHIP, METAL 470 0.50% 1/16W
R101	1-208-822-11	s CHIP, METAL 47K 0.50% 1/10W
R102	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R103	1-218-752-11	s METAL 330K 0.50% 1/16W
R104	1-218-730-11	s CHIP, METAL 39K 0.50% 1/16W
R105	1-218-883-11	s METAL 33K 0.50% 1/16W
R106	1-218-716-11	s METAL 10K 0.50% 1/16W
RV1	1-241-832-21	s RES, ADJ, METAL 5K
RV2	1-241-829-21	s RES, ADJ, METAL 1K
RV3	1-241-832-21	s RES, ADJ, METAL 5K
RV4	1-241-838-11	s RES, ADJ, METAL 500K
RV5	1-241-832-21	s RES, ADJ, METAL 5K
RV6	1-241-828-21	s RES, ADJ, METAL 500
RV7	1-241-828-21	s RES, ADJ, METAL 500
RV8	1-241-825-11	s RES, ADJ, METAL 50
RV9	1-241-741-11	s RES, ADJ, METAL 50K
RV10	1-241-828-21	s RES, ADJ, METAL 500
S1	1-762-488-11	s SWITCH, TOGGLE
S2	1-762-020-11	s SWITCH, TOGGLE
S3	1-762-489-11	s SWITCH, TOGGLE
T1	△ 1-439-419-12	s TRANSFORMER, FLYBACK
VDR1	1-806-497-00	s VARISTOR ERZ-C05DK220

VR-199 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8269-388-A	o MOUNTED CIRCUIT BOARD, VR-199
1pc	3-692-151-01	o PLATE, GROUND
C1	1-104-823-11	s TANTALUM, CHIP 47uF 20% 16V
C2	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C3	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C4	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C5	1-107-686-11	s CHIP, TANTALUM 4.7uF 20% 16V
C6	1-135-160-21	s CHIP, TANTALUM 15uF 10% 16V
C7	1-163-038-00	s CHIP, CERAMIC 0.1uF 25V
C8	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
CN11	1-569-529-21	o HOUSING, 14P
D1	8-719-989-53	s DIODE CL-200HR-C-TSL
D2	8-719-989-53	s DIODE CL-200HR-C-TSL
IC1	8-759-939-53	s IC BA225F-T2
Q1	8-729-028-91	s TRANSISTOR DTA144EUA-T106
Q2	8-729-028-91	s TRANSISTOR DTA144EUA-T106
Q3	8-729-402-19	s TRANSISTOR XN6501
Q4	8-729-402-19	s TRANSISTOR XN6501
R1	1-216-615-11	s METAL 33 0.50% 1/10W
R2	1-216-645-11	s METAL 560 0.50% 1/10W
R3	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R4	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R5	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R6	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R7	1-218-772-11	s METAL 680K 0.50% 1/10W
R8	1-208-822-11	s CHIP, METAL 47K 0.50% 1/10W
R9	1-208-824-11	s CHIP, METAL 56K 0.50% 1/10W
R10	1-216-295-11	s CHIP, CONDUCTOR 0
R11	1-208-822-11	s CHIP, METAL 47K 0.50% 1/10W
R13	1-208-814-11	s CHIP, METAL 22K 0.50% 1/10W
R14	1-208-774-11	s CHIP, METAL 470 0.50% 1/10W
R15	1-208-822-11	s CHIP, METAL 47K 0.50% 1/10W
R16	1-216-645-11	s METAL 560 0.50% 1/10W
RV1	1-238-293-11	s CARBON, VAR 10K
RV2	1-238-290-11	s CARBON, VAR 1K
RV3	1-238-296-11	s CARBON, VAR 10K

 FRAME

Ref. No. or Q'ty	Part No.	SP Description
△	1-251-386-11	s CRT ASSY, 1.5"
	1-775-771-11	o FLEXIBLE CARD WIRE (14 CORE) (VF-60 TO VR-199)
CN101	1-952-420-21	s HARNESS (VF CABLE3)
CN1F(to VF-60 BOARD)		
	1-580-585-11	o HOUSING, 18P
	1-580-599-11	o CONTACT, FEMALE AWG26-30
CN2F(to VF-60 BOARD)		
	1-764-196-11	o HOUSING, 8P
	1-695-215-11	o CONTACT, FEMALE AWG26-30
CN21F(to LP-84 BOARD)		
	1-569-619-11	o HOUSING, CONNECTOR 4P
	1-565-977-11	s CONTACT, FEMALE AWG 28-32
CN31F(to LP-85 BOARD)		
	1-569-619-11	o HOUSING, CONNECTOR 4P
	1-565-977-11	s CONTACT, FEMALE AWG 28-32

3-3. Optional Fixtures

Part No.	SP Description
J-6026-100-A	o RESOLUTION CHART
J-6395-040-A	o EXTENSION BOARD, EX-464
J-6395-050-A	o VF EXTENSION HARNESS

Section 4
Semiconductor Pin Assignments

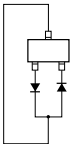
ここに記載されている半導体は、それぞれの機能を等価的に表したものです。なお、互換性のない型名を併記していることがありますので、部品を交換するときは、Spare Partsの章を参照してください。
等価回路は I C メーカーのデータブックに従いました。

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

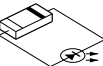
Diode	PAGE	Transistor	PAGE	IC	PAGE
1SS302	4-2	2SA1611	4-2	BA10358F	4-3
		2SA1808	4-2	BA225F	4-3
CL-150D-CD	4-2	2SB624	4-2	HA11423MP	4-3
CL-150PG-CD	4-2	2SC3360	4-2	TC4S01F	4-3
CL-150UR-CD	4-2	2SC4177-L6	4-2	TC4S69F	4-3
CL-200HR	4-2	2SK612	4-2		
MA141WK	4-2	2SK663	4-2		
		2SK664	4-2		
RD6.2UJN-T1	4-2	DTA144EUA	4-2		
V09C	4-2	XN6435	4-2		
V11N	4-2	XN6501	4-2		
		XN6534	4-2		

DIODE

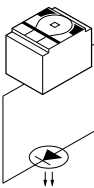
-TOP VIEW-



1SS302

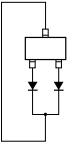


CL-150D-CD;ORANGE
CL-150PG-CD;GREEN
CL-150UR-CD;RED



CL-200HR;RED

-TOP VIEW-



MA141WK

-TOP VIEW-



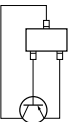
RD6.2UJN-T1



V09C
V11N

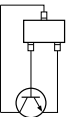
TRANSISTOR

-TOP VIEW-

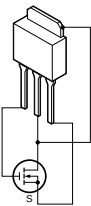


2SA1611
2SA1808
2SB624

-TOP VIEW-

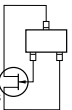


2SC3360
2SC4177-L6



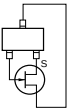
2SK612

-TOP VIEW-



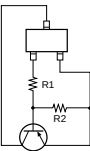
2SK663

-TOP VIEW-



2SK664

-TOP VIEW-

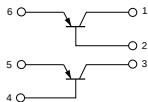


DTA144EUA(R1=47K, R2=47K)

-TOP VIEW-



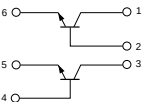
XN6435



-TOP VIEW-



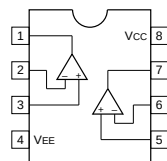
XN6501
XN6534



IC

BA10358F(ROHM)FLAT PACKAGE

DUAL OPERATIONAL AMPLIFIERS
– TOP VIEW –

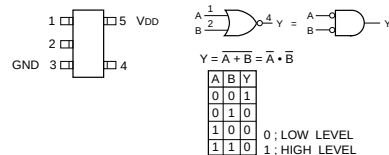


NOTE

	Vcc	VEE
SINGLE SUPPLY	+3 to +32V	GND
SPLIT SUPPLIES	+1.5 to +16V	–1.5 to –16V

TC4S01F(TOSHIBA)CHIP PACKAGE

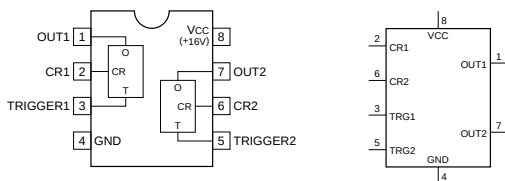
C-MOS 2-INPUT NOR GATE
– TOP VIEW –



TYPE	VDD
4S01F	+3 to +18V
7S02F	
7S02FU	+2 to +6V
7SH02FU	

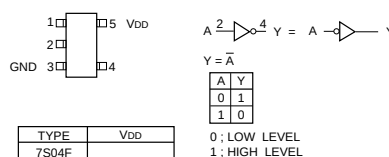
BA225F(ROHM)

CR TIMER
– TOP VIEW –



TC4S69F(TOSHIBA)CHIP PACKAGE

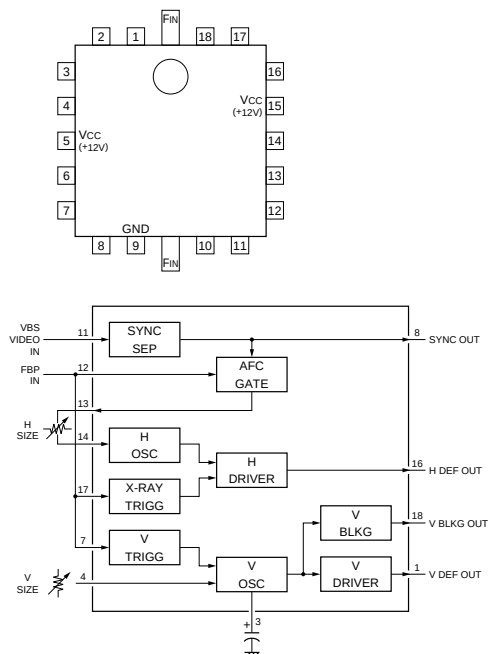
C-MOS INVERTER
– TOP VIEW –



TYPE	VDD
7S04F	
7SU04F	+2 to +6V
7SU04FU	
4S69F	+3 to +18V
4SU69F	
7SH04FU	+2 to +5.5V
7SHU04FU	

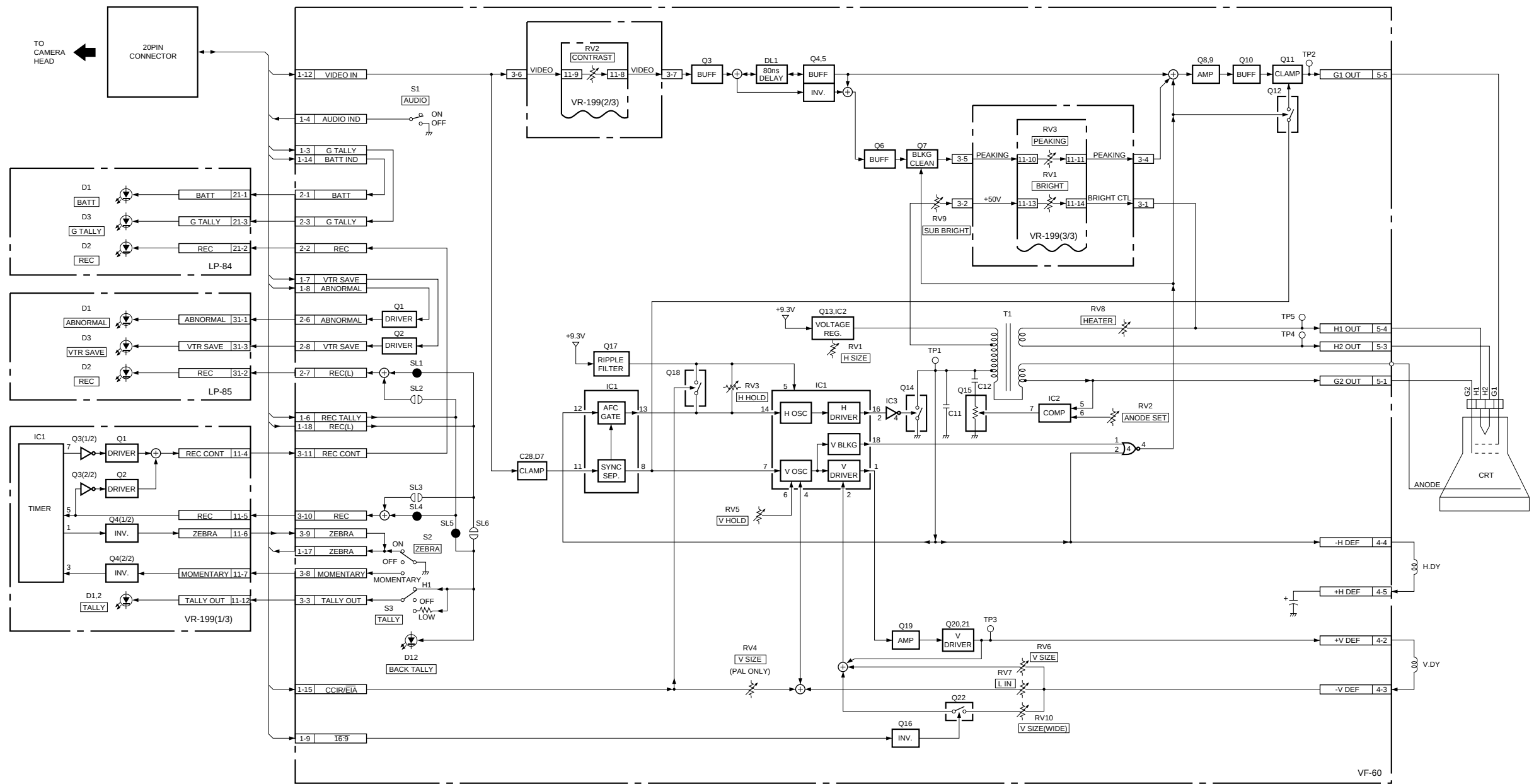
HA11423MP(HITACHI)FLAT PACKAGE

TV H/V SYNC SIGNAL PROCESSOR
– TOP VIEW –



BVF-V10 (UCJ)
BVF-V10CE (CE)

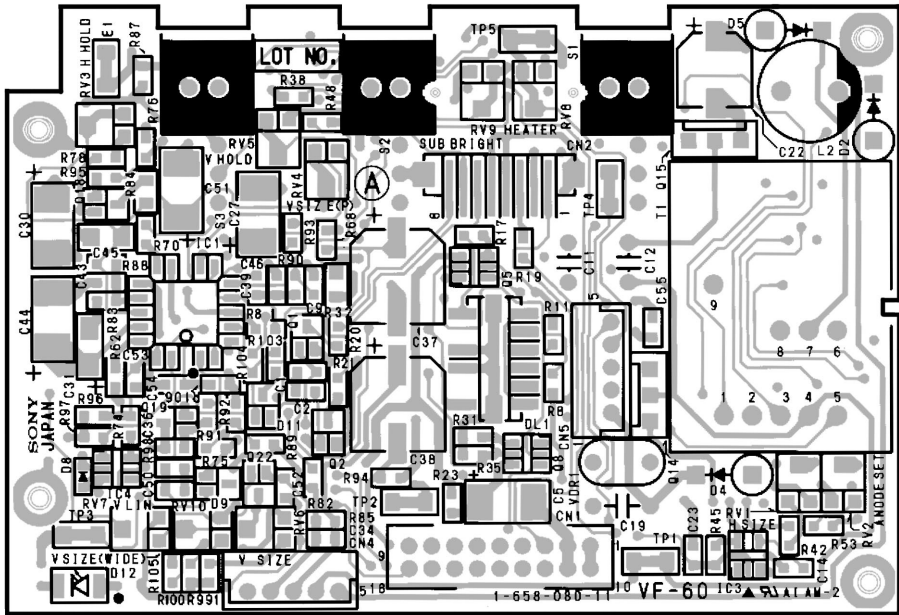
Section 5
Diagrams and Board Layouts



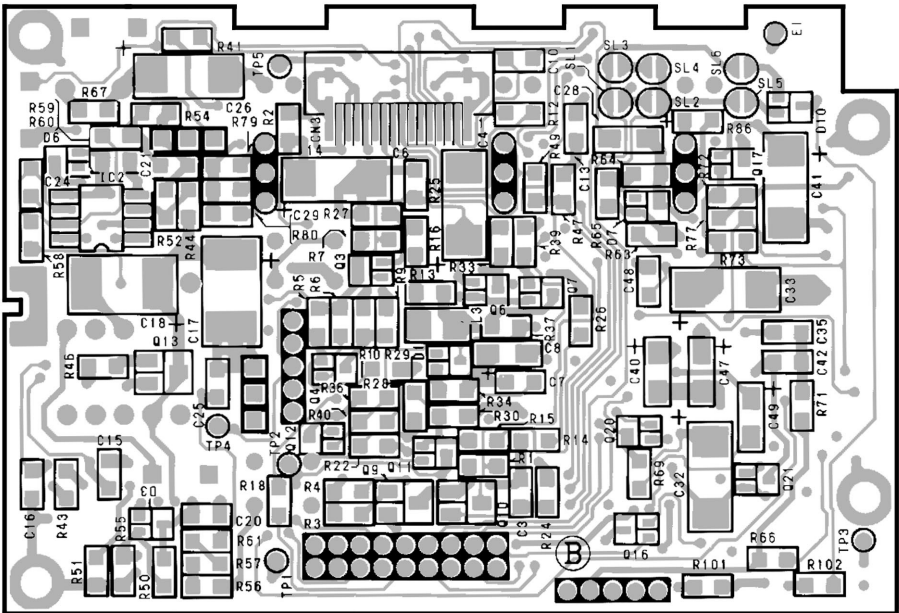
BVP550-VIEW FINDER BLOCK#1/M

Overall
BVF-V10
BVF-V10CE

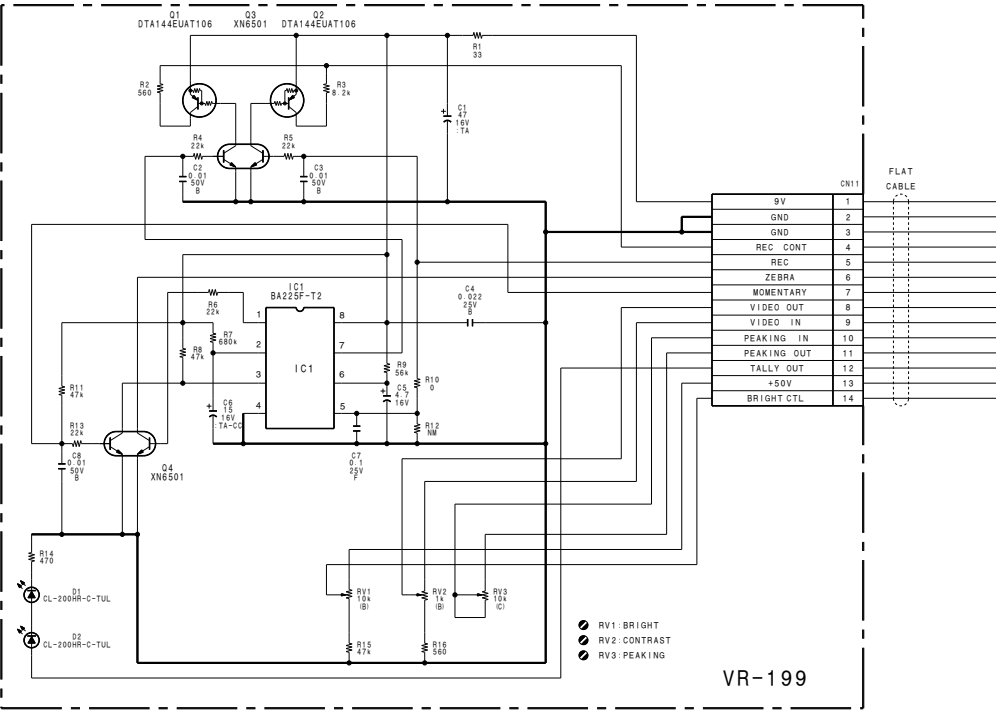
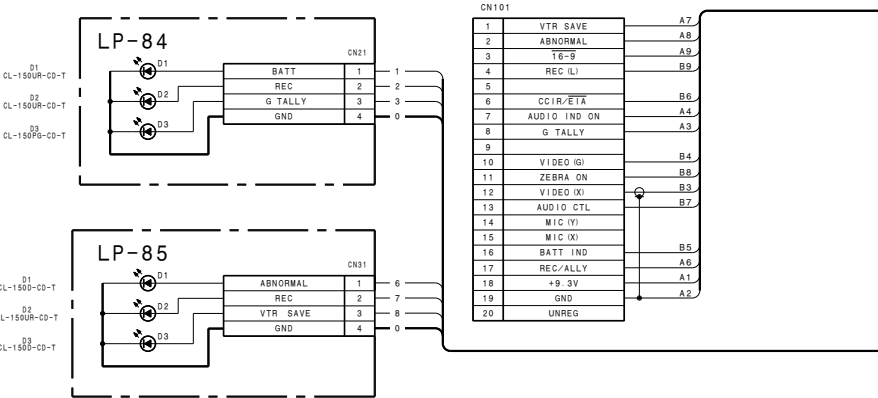
VF-60 BOARD

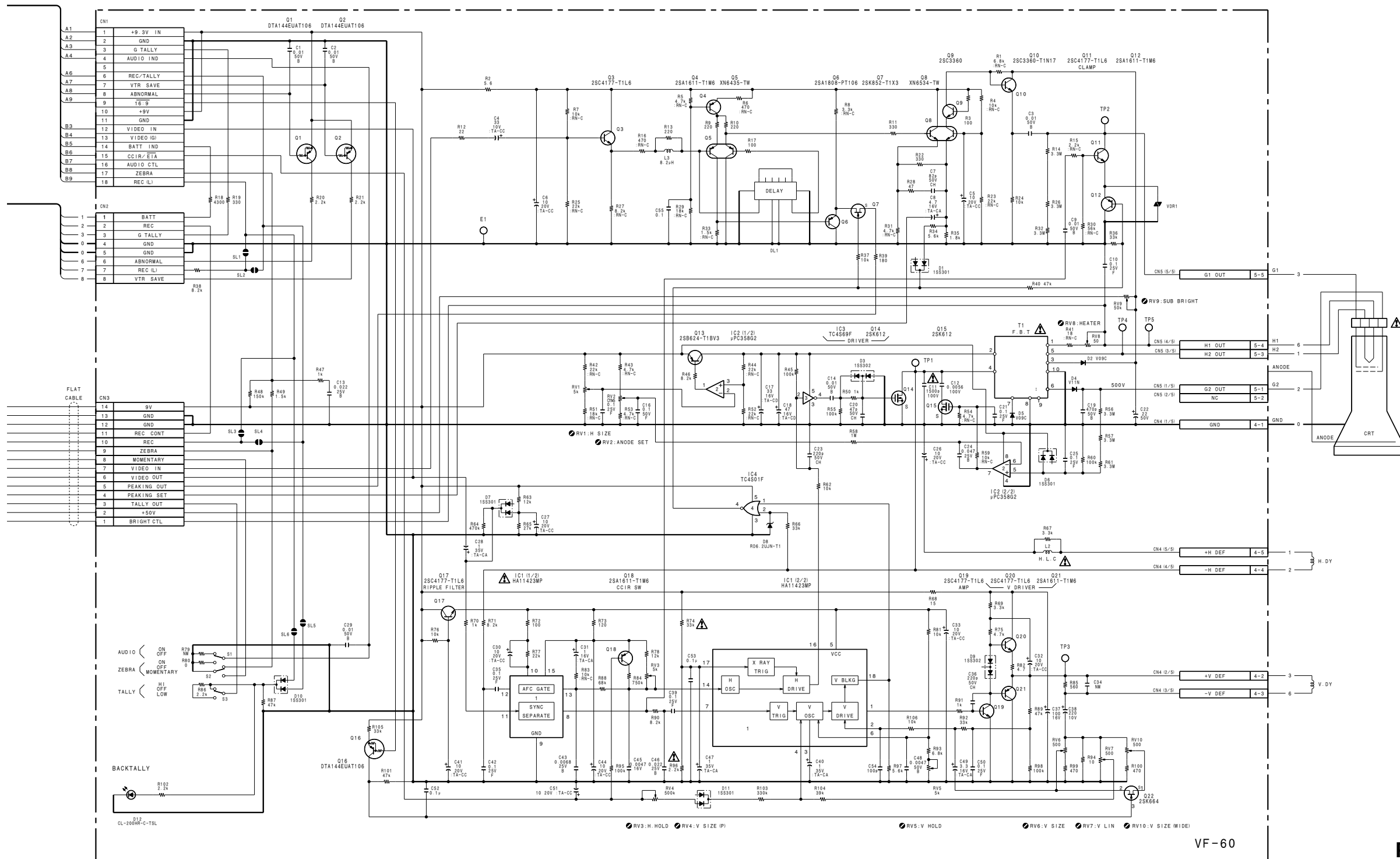


VF-60 - A SIDE -
1-658-080-11



VF-60 - B SIDE -
1-658-080-11





FRAME
VF-60
VR-199
LP-84/85

A-¥BVP550-VIEW FINDER/M
B-¥BVP550-LP84/M
B-¥BVP550-LP85/M
B-¥BVP550-VF60/M
B-¥BVP550-VR199/M

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BVF-V10CE (CE) J, E
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